EXHIBIT “D”

NeurAbilities
A Member of CNNH NeuroHealth

January 31, 2022

David K. Inscho, Esquire
Partner, Kline and Specter, PC
1525 Locust Street
Philadelphia, Pa 19102

Re: Clark v. City of Philadelphia

Dear Mr. Inscho:

At your request, on January 5, 2022 I performed a Neuropsychological Evaluation on Zion Clark (DOB: 04/24/2010), an 11 year-old minor female, for the purposes of assessing her cognitive/ neuropsychological status.

On April 15, 2017 Zion was struck by a motorcycle that was being pursued by a City of Philadelphia police officer that resulted in her suffering various injuries, including Traumatic Brain Injury (TBI), requiring multiple surgeries, hospitalizations and other interventions.

In addition to a direct examination, I reviewed a number of records that you provided to me.

Records Reviewed:

1. City of Philadelphia – EMS report
2. Children's Hospital of Philadelphia, Medical Records and Billing Statements
3. Mastery Charter Elementary School Records
4. Photographs of Zion's injuries
5. Raw Data from Defense Neuropsychologist Edward Moss, PhD

Summary of Records:

City of Philadelphia EMS-North Division
April 15 2017

EMS records indicated that the description of the accident scene included: "Upon arrival to find a 7 y/o/b/f lying supine on 69th St. The Pt was in severe distress." She was described as being "unresponsive, after being struck by motorcycle."

The History of Present Illness indicated that bystanders "stated that the pt and her grand mother (sic) was (sic) crossing 69th St. A motorcycle hit the child and grand mother (sic). Bystanders stated that the child flew 20 feet past the motorcycle hitting her head. The Pt was unresponsive at

the time of bystanders and off duty ems and medical personnel. The Pt is unresponsive…right eye is looking toward the right and the left eye was starlight."

The Assessment revealed that she was unresponsive. Her airway was secured naturally. Her breathing was normal and not labored. Pulses were present and her circulation was weak. There was no cerebral spinal fluid coming from her nose or ears. There were no deformities noted.

She was transported to Children's Hospital of Philadelphia.

Children's Hospital of Philadelphia - Acute Care
April 4 2017 to April 25 2017

Admitting Diagnosis: Head Trauma in a pediatric patient.

Principal/Final diagnosis: TBI (Traumatic Brain Injury) with Secondary Diagnoses to include: cervical (C1 - C2 to C5 - C6) interspinous ligament injury, small subcapsular hepatic laceration, and complex bilateral pelvic fractures.

Acute Hospital Course: She was a nearly 7 year old female struck by dirt bike on 4/15/17 while walking with her grandmother when they were struck by a motorbike going at high speed. She was reportedly thrown 20 feet and was unresponsive at the scene. She was transported directly to CHOP ED and upon arrival had a Glasgow Coma Scale = 4 (E=1, V=2, M=1) and was hypertensive and bradycardic.

She was intubated for airway protection and underwent Head CT (revealing a large, R holohemispheric subdural hematoma with leftward midline shift, right uncal herniation, effacement of much of the basilar cisterns, effacement of the right lateral ventricle, and cerebral sulci; no fractures) and C-Spine CT (findings concerning for avulsion fracture of the tip of the dens; asymmetric widening of the right occipital condyle/C1 lateral mass interval with patient's head somewhat tilted to the left concerning for atlantooccipital dissociation vs asymmetrically positioned rigid cervical collar).

While in CT scan, her R pupil was noted to be fixed and dilated and she was taken to the OR for emergent R decompressive craniectomy.

Following the craniectomy, Abdomen/Pelvis CT revealed complex bilateral pelvic fractures.

She was subsequently admitted to the PICU for close neurological monitoring and care.

Her post-operative course from decompressive craniectomy was reportedly uncomplicated. She was placed on Video EEG. No seizures were noted. She was started on Keppra prophylaxis, LTM showed slowed activity but no seizures.

There were gradual improvements noted throughout the hospitalization although at the time of discharge she continued to have cognitive deficits including difficulty answering open ended questions, reduced language formulation throughout structured tasks, maintaining attention to

task and participation in about 1/2 the sessions, and requesting to termination of activity in 1/2 opportunities.

Children's Hospital of Philadelphia - Inpatient Rehabilitation
April 25 2017 to May 9 2017

Admission Note: Chief Complaint: Deconditioned, TBI
She was admitted to inpatient Rehab for comprehensive PT/OT/SLP.

Brief Hospital Course: TBI s/p R hemicraniectomy. She was on visual/arm's length 1:1 observation for impulsivity/safety but this was discontinued on 4/26/2017. Audiology consulted 4/26/17 for baseline hearing screen post-injury and noted normal hearing. NeuroOphthalmology was consulted 4/28/17 for baseline vision post-injury which noted improving anisocoria. Neuropsychological testing was completed on 5/8/2017. The plan was for possible cranioplasty approximately 6 weeks from surgery (5/27/17). Various follow up appointments were scheduled.

She received daily PT/OT/SLP interventions. Physical Medicine & Rehabilitation followed her. Behavioral Health followed her. She remained on fall precautions without any falls.

Inpatient Neuropsychological Assessment
May 8 2017

Zion was seen by Thomas Flynn, PhD for neuropsychological evaluation. The relevant background indicated that she met early developmental milestones within normal limits and that there was no prenatal exposure to alcohol, tobacco, or illicit substances. Prior to her injury she was a first grade student who attended regular classes without instructional supports in any subjects.

Pre-hospitalization, it was noted that there were no documented behavioral or emotional concerns. Her mother described her as not having any difficulty making or maintaining friendships.

Behaviorally, during evaluation she was described as occasionally getting "stuck" on a phrase and having to repeat the beginning of a phrase before finishing the sentence. Throughout the evaluation, she reported feeling tired, would close her eyes and put her head down on the table, and needed significant prompting to provide answers. There was concern regarding the effect of diminished effort and fatigue on the validity of the test data.

The overall summary indicated that she performed within normal limits on most of the assessment measures with a particular strength noted in her verbal memory for a short story after a long delay. Areas of potential weakness were noted to relate to visual memory and visual pattern recognition. There was a caveat that lower scores on these measures may have been influenced by concerns over her "potentially low effort" during the evaluation. There were no formal measures of effort included in the assessment battery.

Review of the test summary data indicated that on the Matrix Reasoning subtest on the IQ battery she performed at the 10th percentile. On other visually-based tasks, including several memory measures, her performance was significantly impaired (Design Memory: 1st percentile; Picture Memory: 5th percentile). She had below average performances on a measure of visuo-motor integration.

She performed in the Low Average range/16th percentile on the Finger Windows visual working memory test. She performed in the Severely Impaired range on the Design Memory subtest. She performed in the Below Average range on a measure of visual motor integration.

Because of the abbreviated nature of the evaluation, she was recommended for a full/comprehensive neuropsychological evaluation prior to return to school. It was also recommended that her eligibility for an Individualized Education Program under Traumatic Brain Injury classification be considered. The evaluator noted that the degree of accommodations that she would require would likely "evolve" over time with the possibility of reduced needs as she recovered, but also with the potential that she would have increased support needs if the task demands interacted with her neuropsychological weaknesses.

Children's Hospital of Philadelphia
Re-Admission
May 9 2017 to May 24 2017

Admission diagnosis: Wound dehiscence, surgical
Secondary Diagnosis: TBI, multiple pelvic fractures, injury to cervical spine, multiple abrasions, head lice.

She was preparing for discharge from her rehabilitation placement when she had to undergo emergent R hemicraniectomy with bone flap removal, clot evacuation and JP placement.

She was described as a 7 year old with no significant PMH who was injured in a pedestrian vs. motorcycle/dirt bike collision 4/15/17, suffering multiple traumas, s/p an emergent right hemicraniectomy with bone flap removal who was re-admitted to the PICU on 5/9/17 from rehab for wound dehiscence and extra-axial CSF leak and underwent a right craniectomy wound debridement, revision and left frontal ventricular EVD placement on 5/9/17 followed by a right autologous cranioplasty on 5/16/17.

Her traumatic C-spine ligamentous injury was cleared by neurosurgery after MRI on 5/16/17, which showed decreased edema of the cervical ligaments. After pelvic X-rays on 5/18/17 showed stable alignment and healing of her traumatic bilateral pelvic fractures, orthopedics made her WBAT in both lower extremities (had previously been toe touch on left). Repeat X-rays 5/23 showed stable pelvic fractures despite full weight-bearing. Orthopedics recommends continuing weight bearing as tolerated and follow-up in 4 weeks with Dr. Baldwin.

On 5/2317, Zion was deemed safe for transfer to surgical floor. She continued to receive PT and had shown progress throughout her inpatient sessions, but PT recommended outpatient PT.

Children's Hospital of Philadelphia - Readmission
July 20 2017 to July 28 2017

Emergency Department triage note indicated that patient had a history of TBI in April 2017. She was complaining of intermittent headaches and right sided head swelling for two weeks. There was no vomiting diarrhea or fevers. She had been at her neurologic baseline apart from some "aggression."

She was to be admitted for urgent surgical revision.

Admission Diagnoses: Chronic post-traumatic headache, not intractable; Other postoperative complication involving nervous system; Status post craniectomy
Principal/Final Diagnosis: Subdural fluid collection
Secondary Diagnoses: constipation, muscle weakness secondary to history of pelvic fracture

Admit Note: Headaches are almost daily, always right sided (craniectomy area), 10/10, and self-resolve with rest usually within a few minutes. Usually occurs when she is playing and makes her come inside to lay down for a few minutes. Per mom, Zion is unable to describe the headaches. Denies associated symptoms with the headaches such as phonophobia, photophobia, vision changes, nausea or vomiting. No night time awakening or vomiting. Denies any new trauma. Denies any neurological deficits such numbness, tingling, and behavioral changes. When headaches started, Zion's right craniectomy area appeared uneven (more prominent) and mobile (felt bone movement). No drainage, redness, or swelling.

Of note, 5 days prior to admission, mom called neurology regarding these same symptoms and recommended Zion be evaluated in the ED. Mom with no clear answer as to why she did not come sooner except Zion was acting like herself despite the headaches and bone flap instability.

July 21 2017 Progress Note indicated Zion was admitted to 4E from the ED overnight. She has had frequent headaches exacerbated by playing, but relieved when she takes a brief nap (no longer than a few minutes). She has not taken any pain medication for these headache episodes. Her mother expressed that she has been hyperactive and aggressive since her TBI in May 2017. The family has had difficulty scheduling her previous follow-up appointments.

Clymer Elementary School Records

Section 504/Chapter 15 Service Agreement, meeting date November 1 2017

The service agreement/accommodation plan indicated that Zion's diagnosis was "head trauma," which affected her ability to attend school and to transition between classes. The handicap/ disability warranted that she was to be excused for lateness or absence. Also, she was not to attend gym or recess until she was re-evaluated. She was also to be allowed to be excused from class several minutes prior to the group to avoid hallways and crowds. The services were to begin on November 1 2017 and end on October 30 2018.

Student Report Card, dated April 5 2018, 2nd grade: she achieved D (developing) grades during Quarter 2 marking period in physical education and the various component reading skills. In Quarter 2, she achieved D grades for the majority of Language and Writing Skills with the exception of B (below competency) in two areas. Math Skills in Quarter 2 reflected D (developing) grades for 5 of 9 skills and B (below competency) for 4 of 9 skills.

Quarter 3 marking period indicated D for Music and no other grades for other subjects She had 39 absences year to date.

Attendance records indicated that she had 22 absences in school year 2017, 50 absences in 2018, 5 absences in 2020, and 3 absences in 2021.

Her record reflects Fountas & Pinnell reading levels from first grade. On March 16 2017, approximately one month prior to her injury, she was at level E, which falls at first grade expectations; her accuracy level was 98 percent; her fluency level was 2 and her comprehension level was 5. She had improved her reading level from the most recent prior assessment.

Her year-end course grades from school years 2020 to 2021 ranged from 50 to 90, with higher grades in Art (90) and Dance (90) and poorer, mostly failing grades (ranging from 50 to 79) in academic content areas with Math at the lowest (51).

Current Neuropsychological Evaluation:

Zion was seen for Neuropsychological Evaluation on January 5 2022 over an approximate 6-hour assessment session, which included a number of breaks, including a lunch break.

She was accompanied to the evaluation by her mother Lyesha Clark.

At the outset of the evaluation, I explained to Zion and her mother that I had been asked by their attorney to evaluate Zion and I indicated that I would prepare a report that would be provided directly to their attorney. Ms. Clark indicated that she understood my role and that there was no patient confidentiality in this context.

Examination Protocol:

Zion participated in a Neuropsychological Evaluation by Defense Neuropsychologist Edward Moss, PhD on September 13, 2021. Because of the recency of that evaluation, I modified my usual assessment protocol to include the following tests/procedures:

Record Review (see above)
Clinical Interview
Test of Memory Malingering (TOMM)
Wechsler Abbreviated Scale of Intelligence-II (WASI-II)
Child and Adolescent Memory Profile – (ChAMP)
Conners Continuous Performance Test – Third Edition (CPT-3)

Developmental Neuropsychological Assessment – Second Edition (NEPSY-II); *Selected Subtests*
Kaufman Test of Educational Achievement – Third Edition (KTEA-3); *Selected Subtests*
Beery-Buktenica Developmental Test of Visual-Motor Integration 6th Edition (Beery VMI)
Behavior Assessment System for Children - Third Edition (BASC-3), *Parent Form*
Adaptive Behavior Assessment System-Third Edition (ABAS-3)

Interview Information:

I interviewed Zion's mother, Lyesha Clark, to review Zion's developmental, medical, academic, family, and related history.

Zion lives with her mother and her two younger siblings in Philadelphia Pennsylvania. Ms. Clark is the legal guardian and Zion's biological father is not involved in her life.

Ms. Clark is employed as a dietary aide. She graduated from high school and took some classes at the Anthem Institute studying medical assistance. She did not obtain a certificate. She reported that she was never retained in grade school or high school. She reported that she was never diagnosed with ADHD or a learning disability or other neurodevelopmental or psychiatric condition. She reported that the biological father did not graduate from high school and she was not aware what his highest grade of completion was.

Ms. Clark reported that she was 19 years of age at the time of Zion's birth. Ms. Clark reported receiving regular medical and pre-natal care during her pregnancy. She denied any significant health problems during the pregnancy, including elevated fevers, diabetes, high blood pressure, excessive vomiting, illness or injury. She denied alcohol use, smoking or illicit substance use during the pregnancy.

Zion was her first child and was born after a full term pregnancy, via vaginal delivery, and labor lasted "a full day." She was born at Hahnemann University Hospital in Philadelphia Pennsylvania. Ms. Clark reported that Zion was born at a birth weight of 7 pounds 8 ounces and approximately 20 inches in length.

Zion did not need any special care following birth and was discharged with her mother within several days of her birth. There were no issues reported during the first few weeks at home as Zion was reportedly eating and sleeping appropriately.

Zion received her routine immunizations without adverse effects. She is not undergoing medical treatment for any condition at this time. She has had no need for hospitalization other than medical interventions associated with the incident which is the subject of this litigation (see above medical history).

(Of note, Ms. Clark reported that Zion had surgical intervention on approximately February 13, 2018 to insert a plate in the area of her craniotomy and was admitted for several days. This occurred around the time that Zion's youngest sibling was born on February 15 2018. These records were not available for review at this time.)

Regarding sleep, Zion has a tendency to stay up late, often going to bed between 11:00 PM and 12:00 AM. Her mother does not believe she has trouble falling asleep, and she wakes without an alarm generally around 6:00 AM or later.

She denied that Zion experiences episodes of unresponsiveness or other alterations in consciousness. There is no history of frequent ear infections or sinus infections. There were no involuntary movements or tics reported. There has been no recent testing by audiology. She reportedly was seen by optometry when she was in the hospital following her TBI.

Ms. Clark did report that at age 3 or so Zion had a febrile seizure associated with elevated temperature and was seen in the Emergency Department, but was not admitted, and required no special care. There has been no reoccurrence of febrile or other seizure events since that initial episode. She described Zion as in generally good health. She takes no chronic medications other than intermittent ibuprofen and Excedrin for headaches (see below). There is no other history of prior physical traumas or concussion/traumatic brain injury, apart from the April 2017 traumatic accident.

Family medical, neurologic and psychiatric history includes a biological maternal grandmother who "may be schizophrenic or bipolar." Zion's mother has headaches that are of a non-migrainous type which she associates with her vision. Other family history appears non-contributory for ADHD, learning disabilities, epilepsy and related conditions. Per Ms. Clark, Zion's father did not have any known developmental or neuropsychiatric conditions.

Ms. Clark reported that Zion's overall development prior to her TBI at age six years was generally "normal" and she recalled that at her pediatrician visits, Zion was described as "where she needs to be" in terms of motor and language milestones. She was toilet trained at approximately age 2. There has been no loss of any previously acquired skills in early childhood. She is not described as clumsy. She was never a toe walker.

Mother reports that following the TBI that she experienced, she has suffered from headaches two to three times per week which were described as Zion being "sensitive to light and sensitive to noise." She has occasional nausea associated with these headaches. She might take ibuprofen or Excedrin Extra Strength for one out of three of the headaches on a weekly basis.

Ms. Clark indicated that Zion is "not vocal...when she has a headache, she tries to sleep it off and is not one to complain."

Regarding educational history, Ms. Clark stated that Zion is a 6th grade student at the Clymer Mastery Charter School in Philadelphia. Currently she is in virtual school due to the COVID-19 pandemic and was to return to the classroom on January 18 2022. Significant portions of Zion's instruction since March 2020 have been delivered virtually because of the ongoing national medical emergency/pandemic.

Zion is in a mainstream classroom. Around the time of her TBI she had a 504 Accommodations Plan, but her mother noted that they "took away any restrictions after her last surgery in February of 2018."

Her mother reported that there is “not much communication” coming from school. It was her impression that Zion has reduced motivation for school. She is not described as a behavior problem in the academic setting. A recent interim report that Ms. Clark received indicated that Zion was doing “better than expected” in that her grades had improved somewhat. She reported that her grades have improved from the “50s to 70s” per the most recent contact that she had with her education team.

Regarding behavioral changes that Zion experience following her TBI, her mother noted that Zion was “outgoing before” and she described Zion previously as “everybody’s baby” in that her relatives and extended family, including her grandfather, her great aunts, and her aunt would frequently engage with her on play dates or for visits to their residences. Zion initiated and was very receptive to these encounters.

Since the TBI her mother described her as “very emotional now” and “snappy.” She noted that Zion is “easily upset” and can be “very irritable at times.” She described her as becoming frustrated more easily than prior to her TBI. She also described her as “more standoffish” and that she doesn't like to be around people, in stark contrast to her baseline when she sought out social encounters.

She was also described as “outgoing with people” and was “very excited to go places.” Subsequent to her TBI her mother noted that she will show interest in going to places but when she gets there, “she doesn't want to be there.” Her mother noted that she is “more to herself ” which is in contrast to her previous outgoing social disposition.

There has been no history of mental health treatment reported. However, regarding mental health symptoms, Ms. Clark reported that Zion “suffers from something... I think it's a little depression.” She indicated that Zion would not likely describe herself as being depressed because she feels that Zion does not have that degree of self-awareness. She indicated that she has mood changes, irritability, some decreased interest in pleasurable activities, and low frustration tolerance.

In terms of activities that Zion enjoys, Ms. Clark reported that she enjoys drawing, watching movies, and the Harry Potter and Twilight series. She spends a considerable amount of time watching screens on a daily basis.

Ms. Clark reported that Zion's relationship with her siblings is “normal” but she reported that she gets easily agitated, particularly with her younger brother. She “wants him to be quiet 24/7.”

Socially, her mother indicated that Zion talks with several classmates on the phone, “but doesn't go to their houses and they don't ask to come to our house.”

Interview with Zion indicated that she was six years old and in first grade at the time of her accident. She stated that she remembers “absolutely nothing” about the accident itself, but she does recall being in the hospital. She said she had no recollection of the ambulance transport to the hospital and she reported that much of what she remembers, “my mom told me.”

Regarding her general mood, she stated, “I can be all over chill and happy and the next thing I'm bored, mad, or sad.” She stated, “My moods can be all over the place.”

When I asked her what changed after her accident, she said, “I was playful one minute and then the next minute I was mad. I don't know why.”

She also stated that she “can't do a cartwheel or handstand anymore and I used to be able to.” She said that when she tried a handstand, it feels like “my whole head was going to crack through.”

Regarding her headaches, she said that she “sometimes has them every day or sometimes one time per week. Sometimes they’ll last for three days. It’s like a knife stabbing. On the right [side] and everywhere, and on the left [side].”

She stated that when she gets headaches, “the room has to be completely dark and I hide under my covers” to reduce the discomfort. She stated that if the “headache is bad, but bearable, I go about my day.” She stated that she does not like taking medication and when she does, “it numbs it for a minute or doesn’t work.”

Regarding friends, she said, “I do have friends, but I don't talk to them. I can make friends with a girl in first grade and fourth grade…” She stated, “I think I was more interested in people and hanging out with people [before her accident]. Now I can care less.”

Regarding other physical symptoms, she stated, “Sometimes when I bend my leg it feels like cracking and it hurts.”

Test behavior/Level of Effort:

Zion presented as a healthy appearing, well groomed, slightly overweight 11 year old girl. She wore glasses. She was initially quiet, but subsequently engaged in considerable spontaneous conversation with me and my examiner. Zion was very friendly throughout testing and seemed to enjoy talking and she spontaneously shared information about several interests (e.g., cheetahs, her favorite rollercoasters) and friendships.

Her mood was generally euthymic and her affect full. Her speech was appropriate for rate and volume. Her gait appeared normal. She used her right hand on writing tasks and related manual tasks. She had an appropriate tripod grip.

At the beginning of testing, Zion stated that she was in 6th grade but then said, “Well almost 7th….it’s almost summer break.” She was examined on January 5, 2022. There was no further evidence during testing of lack of time or season orientation.

Zion appeared somewhat tired during some portions of the assessment and at one point she appeared to fall asleep while being asked some questions. She was aroused after saying her name. This did not affect her completion or performance on any tasks. She denied falling asleep in other settings but noted that it happens “from time to time” including during math class.

Zion was administered a "freestanding" performance validity or effort test (TOMM). Her initial performance was low (Trial 1: 41/50), but she performed within normal limits on the subsequent trials (Trial 2 = 48/50; retention trial = 49/50). I also reviewed "imbedded" performance validity or effort indicators in other measures (e.g., ChAMP Validity Indicator Raw Score = 67: Valid).

Additionally, throughout testing, Zion's effort seemed to be appropriate. She appeared thoughtful and took her time before answering questions and did self-correct answers on several occasions.

Overall, her behavior throughout the evaluation was reflective of good cooperation, appropriate levels of sustained effort, and other generally appropriate test-taking behaviors—notwithstanding her appearing to fall asleep briefly on one occasion during conversation.

Based on the above considerations, the data that she generated during the evaluation appear to be a valid reflection of her skills at this time, unless otherwise indicated.

Examination Results and Clinical Impressions:

Intellectual Functioning

Zion's broad cognitive abilities were assessed with the Wechsler Abbreviated Scale of Intelligence-Second Edition (WASI-II). The WASI-II is a standardized and shortened version of an intelligence test that assesses general problem solving and reasoning skills in verbal and non-verbal/visual (performance) domains. Four subtests (two in each domain) are used together to arrive at a global indicator of ability (Full Scale Score).

<table>
<tr><th>WASI-II Subtest</th><th>T Score</th><th>IQ Indexes</th><th>FSIQ</th></tr>
<tr><td>Vocabulary</td><td>51</td><td rowspan="2">Verbal Comprehension Index
VCI = 102
55th percentile</td><td rowspan="4">Full Scale-4
FSIQ = 88
(21st percentile)</td></tr>
<tr><td>Similarities</td><td>52</td></tr>
<tr><td>Block Design</td><td>30</td><td rowspan="2">Perceptual Reasoning Index
PRI = 77
(6th percentile)</td></tr>
<tr><td>Matrix Reasoning</td><td>42</td></tr>
</table>

Zion obtained a Full Scale-4 IQ score of 88 (21st percentile) which places her overall functioning in the upper end of the Low Average range. Her profile revealed significantly variable performances between verbal and non-verbal domains.

Zion's Verbal Comprehension Index (VCI = 102, 55th percentile) fell in the mid-Average range.

She performed in the Average range on measures assessing her general word knowledge (*Vocabulary*), and verbal categorical reasoning (*Similarities*).

Zion's Perceptual Reasoning Index (PRI = 77, 6th percentile) fell in the Very Low range.

She performed in the Very Low range on measures of visual analysis and synthesis while manipulating blocks (*Block Design*). Her first two errors were both rotation errors (i.e., the designs were made correctly but the orientation or rotation of the block set deviated from scoring rules, which triggered the discontinuation criterion and resulted in her calculated score. Zion was administered additional items to "test the limits" and she had subsequent inaccurate constructions and one rotation error. Her performance was in the Very Low range (T score = 30).

On a test of pattern recognition and analysis skills (*Matrix Reasoning*), Zion performed in the Low Average range.

Language Output: NEPSY-II; WASI-II

Zion's verbal fluency skills were assessed using the NEPSY-II.

NEPSY-II	Scaled Score	Percentile Rank
Word Generation – Semantic	16	98th
Word Generation – Initial Letter	8	25th

On a timed task of verbal fluency in which Zion was asked to name as many words as she could from a specified category (*Word Generation – Semantic*), she performed at the 98th percentile. She was enthusiastic and seemingly could have easily continued to name relevant words past the time limit if she was not stopped. In contrast, on a task in which she was asked to name as many words that begin with a specified letter under a time limit (*Word Generation – Initial Letter*), Zion performed at the 25th percentile, the bottom of the Average range. She expressed frustration during this task and had difficulty coming up with words towards the end of the time limit.

Expressive vocabulary and abstract word reasoning, on the WASI-II, per above, fell in the middle of the Average range.

Memory and Learning: ChAMP

Zion's verbal and visual memory skills were assessed using the ChAMP.

ChAMP Subtest	Scaled Score	Percentile Rank
Lists		
Immediate Recall	6	9th
Delayed Recall	4	2nd
Recognition	1	<1
Instructions		
Immediate Recall	13	84th
Delayed Recall	12	75th
Recognition	12	75th
Objects		
Immediate Recall	5	5th

Delayed Recall	10	50th
Places		
Immediate Recall	6	9th
Delayed Recall	5	5th
Total Memory Index Standard Score SS = 84 (14th percentile)		

On the *Lists* subtest of the ChAMP, Zion was read a list of words over three trials and asked to recall as many words as possible after each trial under immediate and then delayed conditions. Her performance was in the Low Average range for the immediate recall portion and in the Very Low range when asked to recall the same list after several minutes had passed. Then, following the delayed recall portion, she was read another list of words and asked if she recognized which words were from the original list. Her performance was in the Extremely Low range.

Zion's ability to recall structured or meaningful verbal information was assessed on the *Instructions* subtest of the ChAMP. This was conducted by reading her a short story and then asking her to recall specific details. Her performance was in the High Average range for immediate recall and in the Average range for the delayed and recognition tasks.

Zion's visual memory for unstructured information was assessed using the *Objects* subtest. On this subtest, she was asked to study a number of different geometric objects and then identify the ones she had seen after a brief delay. Her performance was in the Very Low range. After a longer delay, she was again asked to pick out the shapes she had seen before, and her performance improved to the Average range.

Zion's visual memory for structured visual information was assessed using the *Places* subtest of the ChAMP. On this subtest, she was asked to study several different scenes and identify the ones she had seen after a brief delay. Her performance was in the Low Average range. After a longer delay, she was asked to repeat the task, and her performance was in the Very Low range.

Zion's performance on the verbal memory tasks was significantly better than her visual memory performance (Verbal Memory Index score = 91, 27th percentile; Visual Memory Index score = 80, 9th percentile).

Her **Total Memory Index** score was SS = 84 (14th percentile), falling in the Low Average range.

On a task of visual memory for facial information, Zion's performance, fell in the Average range (*Memory for Faces*). On the delayed trial, her performance was at the low end of Average (*Memory for Faces, Delayed*).

NEPSY-II	Scaled Score	Percentile Rank
Memory for Faces	11	63rd
Memory for Faces – Delayed	8	25th

Attention and Executive Functioning:

Zion's sustained visual attention was assessed using the CPT-3, which is a 14-minute continuous performance test that assesses visual attention, impulsivity, sustained attention, and vigilance.

***Lower T-Scores = better performance**

CPT 3 Variable Type	Measure	T-Score	Guideline	Interpretation (Lower T-Scores = better performance)
Detectability	d'	49	Average	Average ability to differentiate targets from non-targets
Error Type	Omissions	58	High Average	Slightly above average rate of missed targets
	Commissions	39	Low	Good performance; below average rate of incorrect responses to non-targets
	Perseverations	44	Low	Good performance; below average rate of random, repetitive, or anticipatory responses
Reaction Time Statistic	HRT	64	Slow	Slow mean response speed
	HRT SD	56	High Average	Slight inconsistency in reaction times
	Variability	64	Elevated	High variability in reaction time
	HRT Block Change	55	High Average	Slight reduction in response speed in later blocks
	HRT ISI Change	56	High Average	Slight reduction in response speed at longer ISIs

Relative to the normal sample, Zion responded more slowly and displayed more variability in response speed. Overall, Zion had a total of 2 atypical T-scores, suggesting a moderate likelihood of a disorder characterized by attention deficits. Behaviorally, she was observed to remained seated and looking at the computer for the duration of testing. There were no repetitive or distracted behaviors observed.

To further assess more complex executive function abilities (cognitive/response inhibition) Zion was administered several subtests from the NEPSY-II.

NEPSY-II	Scaled Score	Percentile Rank
Inhibition-Naming	11	63rd
Completion Time	5	5th

Naming Total Errors	-	>75th
Inhibition-Inhibition	8	25th
Completion Time	7	16th
Inhibition Total Errors	-	26-50th
Inhibition-Switching	7	16th
Completion Time	5	5th
Switching Total Errors	-	26-50th

On these tasks of cognitive inhibition, Zion completed a simple naming task where she looked at a series of black and white shapes or arrows, then named either the shape or the direction of the arrow (*Inhibition-Naming*). Her performance was in the Average range. She worked at a slower pace slow pace (*Inhibition-Naming Completion Time;* Very Low range) but made relatively few errors (*Naming Total Errors;* High Average range).

She then completed an inhibition task, where she looked at the same series of black and white shapes or arrows but named the opposite shape or direction of the arrow. Her performance remained in the Average range when asked to inhibit "automatic or overlearned" responses (*Inhibition-Inhibition*). Her speed was somewhat slow (*Inhibition-Inhibition Completion Time;* Low Average) but she made an average number of errors (*Inhibition Total Errors).*

When asked to inhibit "automatic" responding and shift her attention (e.g., say the opposite shape if the color is black, but not white) her performance was in the Low Average range (*Inhibition-Switching*). Her pace was Very Low (*Inhibition-Switching Completion Time*), and her number of errors was in the Average range (*Switching Total Errors*).

Visuomotor/Visuospatial Processing: NEPSY-2; Beery - VMI

Zion's visual scanning and ability to judge line orientation was assessed on the NEPSY-II.

NEPSY-II	Scaled Score	Percentile Rank
Arrows	2	0.4th

On the *Arrows* subtest, Zion's ability to judge line orientation was assessed on a task that required her to look at an array of arrows arranged around a target and then identify the arrows that pointed to the center of the target. She performed in the Extremely Low range.

The Beery-VMI assesses the integration and coordination of visual perceptual and fine motor skills on a drawing task. Zion was asked to precisely copy geometric shapes of increasing complexity.

Beery VMI	Standard Score	Percentile Rank
Visual Motor Integration	69	2nd
Visual Perception	86	18th
Motor Coordination	64	1st

Zion's performance fell in the Very Low range for overall visual motor integration. On the motor coordination condition, she fell in the Extremely Low range and her execution was quite slow in that she spent 4 minutes, 14 seconds on this task. She displayed Low Average performance in visual perception skills. She needed some reminders to stay on task during this portion of testing.

Academic Achievement: KTEA-3

The KTEA-3 is a widely used instrument for measuring the development of basic academic skills across reading, mathematics, and writing. Scores on this instrument are determined by comparing Zion's performances to other individuals her age. Composite scores are in bold.

KTEA-3 Form A	Standard Score	Percentile Rank
Reading Composite	87	19th
Letter & Word Recognition	84	14th
Reading Comprehension	94	34th
Nonsense Word Decoding	82	12th
Silent Reading Fluency	89	23rd
Spelling	68	2nd
Writing Fluency	62	1st
Math Composite	71	3rd
Math Concepts & Applications	72	3rd
Math Computation	73	4th
Math Fluency	67	1st

Reading
Zion's overall reading abilities were in the Low Average range. Zion's ability to read single words aloud (*Letter & Word Recognition*) was in the Low Average range. Zion's ability to answer comprehension questions following short paragraphs (*Reading Comprehension*) was better, falling in the Average range.

Her ability to decode nonsense words aloud (*Nonsense Word Decoding*) was Low Average. The *Silent Reading Fluency* task requires the child to read short sentences and mark each one *yes* or *no* to indicate its truth in two minutes. She also performed in the Low Average range on this task.

Written Language

Zion's ability to correctly write dictated words (*Spelling*) was in the Very Low range. Her ability to quickly write simple sentences describing pictures was in the Very Low range (*Writing Fluency*).

Qualitatively, Zion had inconsistent letter formation, frequently wrote above or below the line, had compressed spacing, occasionally wrote at an upward angle and demonstrated other grapho-motor anomalies.

Mathematics
Zion was asked to solve math problems that relate to real life situations and skills such as number concepts, arithmetic, time and money, and measurement (*Math Concepts and Applications)*. On this task, she performed in the Low range. She often had difficulty knowing what operation to use, in addition to making computation errors. Zion's ability to solve math calculation problems on printed paper (*Math Computation*) was also in the Low range.

Her ability to rapidly and accurately solve simple addition, subtraction problems, multiplication, and division in a given time limit (*Math Fluency*) was in the Very Low range. She completed just 12 problems in one minute (only addition problems).

Emotional/Behavioral Functioning Ratings: Behavioral Assessment Scale for Children-3 (BASC-3: Parent Rating)

The BASC-3 is a 175-question behavior rating scale designed to identify a variety of emotional and behavioral concerns of children on the basis of parent ratings. Zion's mother provided ratings on the BASC-3; her validity indexes were within acceptable ranges.

On **Clinical Scales**, higher T-scores may indicate difficulty in that area (60-69 are At-Risk scores, 70 and higher are Clinically Significant scores). Scores in the At-Risk range may identify a significant problem that may not be severe enough to require formal treatment or may identify the potential of developing a problem that needs careful monitoring. T-scores in the Clinically Significant range suggest a high level of maladjustment.

On **Adaptive Scales**, lower scores may indicate more difficulty in that area (30-40 are At-Risk scores, less than 30 are Clinically Significant scores).

BASC-3 PARENT Rating Scale Clinical Scale	**T-Score**	**Percentile**
Hyperactivity	49	53
Aggression	51	63
Conduct Problems	59	85
Anxiety	54	71
Depression	63	90
Somatization	66	92
Attention Problems	54	66
Atypicality	60	86

Withdrawal	58	82
Adaptive Scale	**T-Score**	**Percentile**
Adaptability	53	61
Social Skills	50	43
Leadership	45	30
Functional Communication	42	20
Activities of Daily Living	39	14

Ms. Clark rated Zion as having no **clinically significant symptoms/behaviors**, but she rated Zion as having **At-Risk symptoms/behaviors** in the following domain(s): Depression, Somatization, and Atypicality.

In the Adaptive Skill Domain, she rated Zion in the **At-Risk level** in the following area: Activities of Daily Living.

She rated Zion within **Average/Typical** levels of behaviors/symptoms in the following domains: Hyperactivity, Aggression, Conduct Problems, Anxiety, Attention Problems, and Social Withdrawal.

Adaptive Functioning:

The **Adaptive Behavior Assessment System – Third Edition (ABAS-3)** measures mastery of personal and social demands that are expected of someone at a particular chronological age. Adaptive behavior assessment attempts to measure one's actual abilities, not potential capabilities. Parents or guardians provide information about their child's behavior in a questionnaire format, which allows for the classification of skills according to age norms in three areas of development.

ABAS-3 Composite	Standard Score	Percentile Rank	Qualitative Descriptions
General Adaptive Composite	120	>90	Superior
Conceptual	120	>90	Superior
Social	120	>90	Superior

According to her mother's report, Zion's General Adaptive Composite (GAC) fell in the **Superior** range indicating well above average global adaptive skills. No significant concerns were noted.

However, considering Ms. Clark's report of Zion's academic challenges, social-interpersonal difficulties, mood dysregulation, headaches and various other concerns, it appears that she did not understand or did not follow the instructions when completing the inventory. Unlike the BASC-3, the ABAS-3 does not have an internal validity and or consistency scale to help establish whether the respondent over-endorsed, under-endorsed, or inconsistently endorsed symptoms or behavior. Her ratings do not appear to validly reflect Zion's actual adaptive skills. Further, Ms. Clark's ratings of Zion's adaptive behavior on the BASC-3 subscale resulted in

Below Average adaptive skills, which is inconsistent with her ABAS-3 ratings.

Summary, Analysis and Opinion:

1. Medical record documentation reflects that on April 15, 2017 Zion Clark suffered a severe Traumatic Brain Injury (TBI), injury to her liver, cervical spine injury and a fractured pelvis as a direct result of being struck by a motorcycle as a pedestrian.

   Her Glasgow Coma Scale score was 4 at the time of injury; she had a period of post-injury unconsciousness; she required intubation; she had a large right-sided holohemispheric subdural hematoma (which later evolved to the left side) resulting in shifting and compression of multiple brain structures; she had abnormal CT and EEG studies during her hospital stay; and, she had a craniectomy and then cranioplasty that required neurosurgical revision on one, and possibly two occasions. She required inpatient Speech, Physical, and Occupational rehabilitation therapies, which she benefitted from.

2. Her pre-injury history was unremarkable and she reportedly had typical cognitive, language, developmental, and social interaction skills and no prenatal or perinatal risk factors for neurocognitive impairment.

   Objective data from her early academic record reflects that on the Fountas & Pinnell reading benchmark scale, approximately one month prior to her injury (when she was in first grade), she was on Level E with 98% reading accuracy, which corresponds to an early/middle first grade level. She had shown progression from benchmark testing administered earlier in that academic year.

   Her recent (and prior) post-injury school progress reports reflect numerous failing grades in the core academic areas.

3. Zion's mother's primary concerns involve her observations that Zion has significant emotional instability, low frustration tolerance, and is largely disinterested in socializing with others and is no longer "outgoing" – in contrast to her pre-injury baseline of being very social and emotionally stable. Zion also states that her "moods can be all over the place" and that she is no longer interested in people/friends following her injury ("Now I can care less").

4. Zion has suffered from chronic and persistent post-traumatic headaches since her injury and they occur generally multiple times per week and can be of varying severity and duration, including some lasting for several days.

5. On my Neuropsychological Examination Zion manifested a pattern of neurocognitive strengths and deficits, which is typical of patients who have experienced a TBI.

6. What is notable (and predictable) regarding her pattern of deficits is that her profile is consistent with what is often seen in patients with right hemisphere brain dysfunction or

damage. The initial and primary injury to Zion's brain as result of the accident involved the right cerebral hemisphere (but due to swelling and evolution of her subdural hematoma, there was involvement of subcortical structures and also involvement of the left cerebral hemisphere).

7. In particular, on IQ testing her Full-Scale IQ fell at the 21st percentile (Low Average), with an Average level Verbal Comprehension Index (55th percentile), but with a significantly weaker and impaired nonverbal Perceptual Reasoning Index falling at the 6th percentile. Her weaker non-verbal performance on the IQ measure very likely reflects right hemisphere brain impairment.

   My review of Dr. Moss' raw Neuropsychological Evaluation data revealed that Zion's Full-Scale IQ on the WISC-5 he administered was very comparable to my evaluation findings, and consistent with my data, there was significant weakness identified on multiple nonverbal-perceptual reasoning measures, including the Fluid Reasoning Composite score of 74 falling at the 4th percentile.

8. Further evidence of right hemisphere impairment was found on my evaluation using a measure of visual motor integration (BEERY VMI), on which Zion performed poorly; on Dr. Moss's evaluation, utilizing the same measure, her performance was even weaker, falling at less than the 1st percentile.

9. Zion has Dysgraphia, or impaired handwriting, which also reflects impaired visuo-spatial processing, influenced by right hemisphere impairment.

10. Zion's poor ability to judge line orientation on my evaluation (Arrows subtest), another skill supported largely by right hemisphere parietal lobe functioning, was performed at less than the 1st percentile.

11. Dr. Moss administered a series of tasks (D-KEFS Trail Making Tests) measuring visual scanning, visual-motor speed, letter sequencing, and number-letter sequencing. Zion perform quite poorly on each of the component tasks, in large part, a reflection of her impaired right hemisphere abilities.

12. Zion's visual memory performance on my evaluation was weaker, overall, than her verbal-auditory memory and this was a pattern also seen on my review of Dr. Moss' neuropsychological data. Visual memory processing is recognized as being largely supported by right hemisphere neural systems.

13. Academically, Zion has Low Average, barely adequate reading skills despite average level performance as measured on a benchmark reading assessment prior to her injury. Her mathematical abilities, however, are very impaired, both on my evaluation and based on my review of Dr. Moss' data. Math calculation and math reasoning abilities are influenced by multiple brain systems, but again, the contribution of her right hemisphere impairment has adversely affected her ability to develop age-expected math competence.

14. In terms of overall psychological well-being, Zion reports that she has lost interest in other people, despite being an outgoing and engaged child prior to her injury. Her mother reports the same. Both Zion and her mother report that she is emotionally dysregulated and reactive with increased irritability. Both Zion and her mother report that these changes in her overall emotional well-being occurred immediately after her TBI.

In summary, Zion's history and clinical condition at this time reflect the following diagnoses:

1. History of Traumatic Brain Injury (TBI) with residual/chronic right hemisphere cerebral dysfunction
2. Post-Traumatic Headaches, chronic, secondary to TBI
3. Specific Learning Disorder in Mathematics (secondary to TBI)
4. Dysgraphia (secondary to TBI)
5. Visual Memory Deficits (secondary to TBI)
6. Mood Disorder Related to Another Medical Condition (TBI), Mild, with labile mood and reduced social initiative and engagement

At this time, considering that she is now approaching five years post-injury, her neurocognitive deficits are very likely permanent. She does have the potential to benefit, somewhat, from further rehabilitation therapies and specialized education programming (i.e., an Individualized Education Program under the Educational Classification of TBI). Her therapies should include Cognitive Rehabilitation Therapy, Psychological Therapy and Psychiatric Evaluation/Treatment.

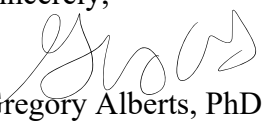
Her overall IQ has been reduced as a result of her TBI, and this, in conjunction with her acquired mathematics learning disability and mood disorder (should it not improve through psychological/psychiatric intervention), will adversely influence her ability to progress successfully through school and, ultimately, negatively affect her vocational earning potential.

Zion's quality of life, especially in terms of her social interactions and social relations, has been adversely affected as a direct result of her TBI.

My analysis and opinions are based upon my clinical experience, training, education, general neuropsychological knowledge and familiarity with the neuropsychological literature. My opinions are provided within a reasonable degree of neuropsychological certainty.

I reserve the right to amend and/or supplement this report should additional information or records become available or if I am requested to further review the records and documents already supplied to me.

Sincerely,



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